

## WHAT IS CLAIMED IS:

- 1 1. A lane recognition apparatus for a vehicle,  
2 comprising:  
3 an image picking-up section picking up a road image  
4 ahead of the vehicle;  
5 a lane-marker detecting section detecting a  
6 plurality of lane-marker candidate points on the road  
7 image;  
8 a road model parameter calculating section  
9 calculating a road model parameter representative of a  
10 road shape ahead of the vehicle on the basis of the  
11 lane-marker candidate points;  
12 a deviation calculating section calculating a  
13 deviation between the lane marker candidate point and an  
14 estimated candidate point estimated from the road model  
15 parameter; and  
16 a lane marker detection feasibility determining  
17 section determining whether the road image is employed  
18 for detecting the lane marker, on the basis of the  
19 deviation.
- 1 2. The lane recognition apparatus as claimed in claim 1,  
2 wherein the lane-marker detecting section detects the  
3 lane-marker candidate points in the form of coordinate  
4 values on a plane coordinate system of the image plane,  
5 and the road parameter calculating section calculating  
6 the road parameter on the basis of the coordinate values  
7 of the lane-marker candidate points.
- 1 3. The lane recognition apparatus as claimed in claim 1,  
2 wherein the deviation calculating section calculates an  
3 absolute value of a difference between the lane marker  
4 candidate point and the estimated candidate point which  
5 have the same distance from the vehicle on the road image,  
6 and outputs an average of all absolute values of the

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1 8. The lane recognition apparatus as claimed in claim 1,  
2 wherein the road parameter calculating section uses the  
3 previous value of the road model parameter without  
4 initializing the road model parameter when it is  
5 determined that the road image is not employed for  
6 detecting the lane marker.

1 9. The lane recognition apparatus as claimed in claim 1,  
2 wherein the road parameter calculating section calculates  
3 the road model parameter without employing information as  
4 to the lane marker candidate point when it is determined  
5 that the road image is not employed for detecting the  
6 lane marker.

1 10. A lane recognition apparatus for a vehicle,  
2 comprising:  
3 image picking-up means for picking up a road image  
4 ahead of the vehicle;  
5 lane-marker candidate-point detecting means for  
6 detecting a plurality of lane marker candidate points  
7 from the road image;  
8 road model parameter calculating means for  
9 calculating a road model parameter representative of a  
10 road shape ahead of the vehicle on the basis of the lane  
11 marker candidate points;  
12 deviation calculating means for calculating a  
13 deviation between the lane marker candidate point and an  
14 estimated candidate point estimated from the road model  
15 parameter; and  
16 lane marker detection feasibility determining means  
17 for determining whether the road image is employed for  
18 detecting the lane marker, on the basis of the deviation.

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1 11. A method for recognizing a lane ahead of a vehicle,  
2 comprising:  
3 picking up a road image ahead of the vehicle;  
4 detecting coordinate values of a plurality of lane  
5 marker candidate points from the road image;  
6 calculating a road model parameter representative of  
7 a road shape ahead of the vehicle on the basis of the  
8 coordinate values of the lane marker candidate points;  
9 calculating a deviation between the lane marker  
10 candidate point and an estimated candidate point  
11 estimated from the road model parameter; and  
12 determining whether the road image is employed for  
13 detecting the lane marker, on the basis of the detecting  
14 deviation.

1 12. A lane recognition apparatus for a vehicle,  
2 comprising:  
3 a camera installed to the vehicle, the camera  
4 picking up a road image ahead of the vehicle; and  
5 a processor coupled to the camera, the processor  
6 being arranged  
7 to detect a plurality of lane marker candidate  
8 points from the road image;  
9 to calculate a road model parameter representative  
10 of a road shape ahead of the vehicle on the basis of the  
11 lane marker candidate points;  
12 to calculate a deviation between the lane marker  
13 candidate point and an estimated candidate point  
14 estimated from the road model parameter; and  
15 to determine whether the road image is employed for  
16 detecting the lane marker, on the basis of the deviation.

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